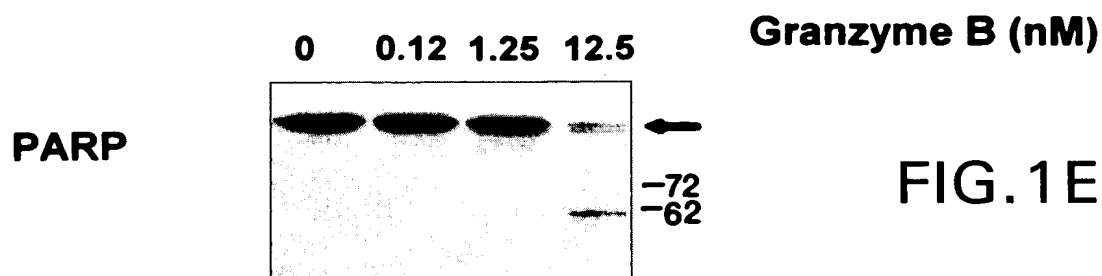
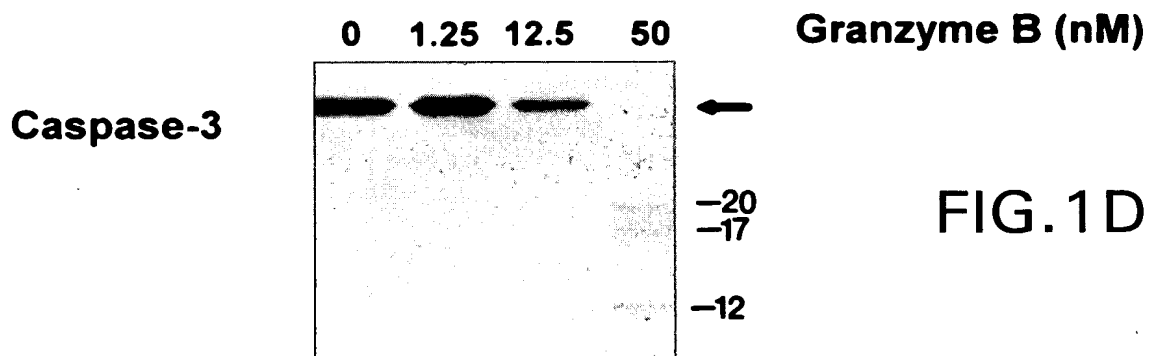
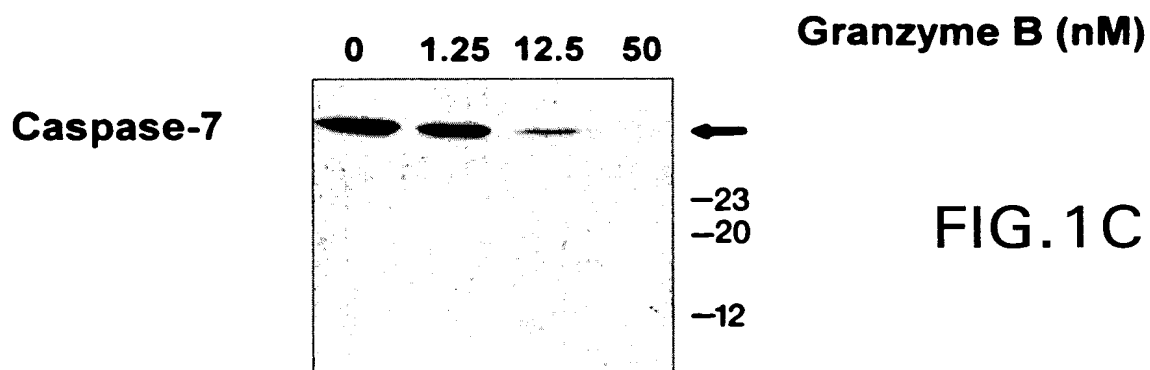
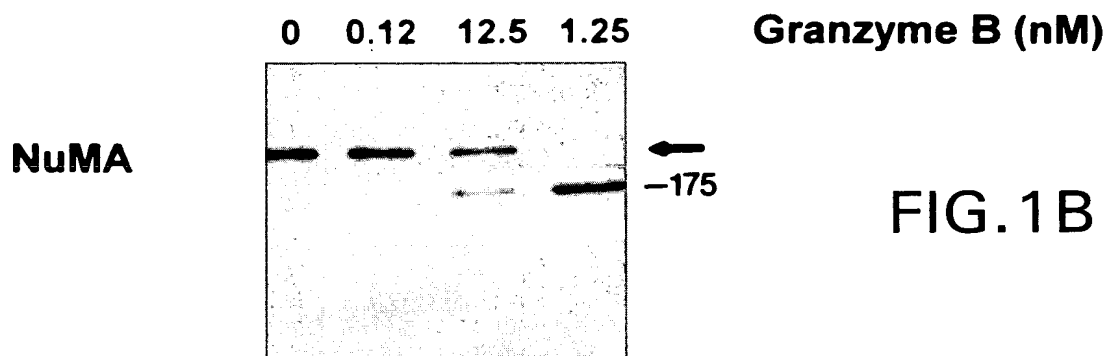
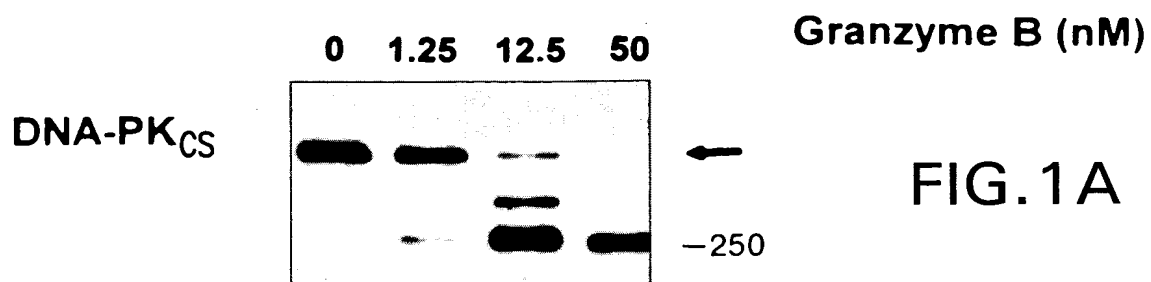




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1/17



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2/17

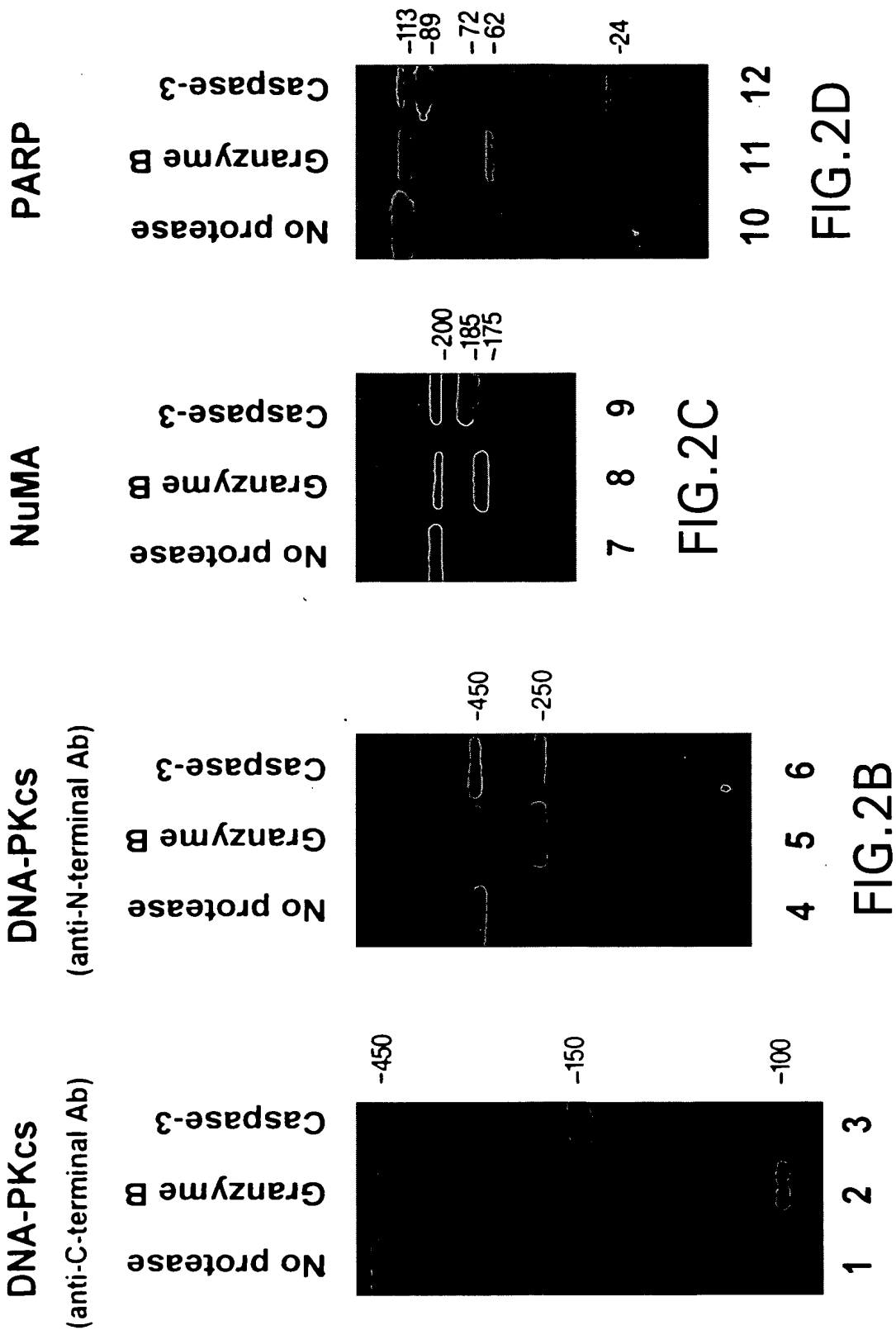


FIG.2A

1 2 3

FIG.2B

4 5 6

FIG.2C

7 8 9

FIG.2D

10 11 12

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3/17

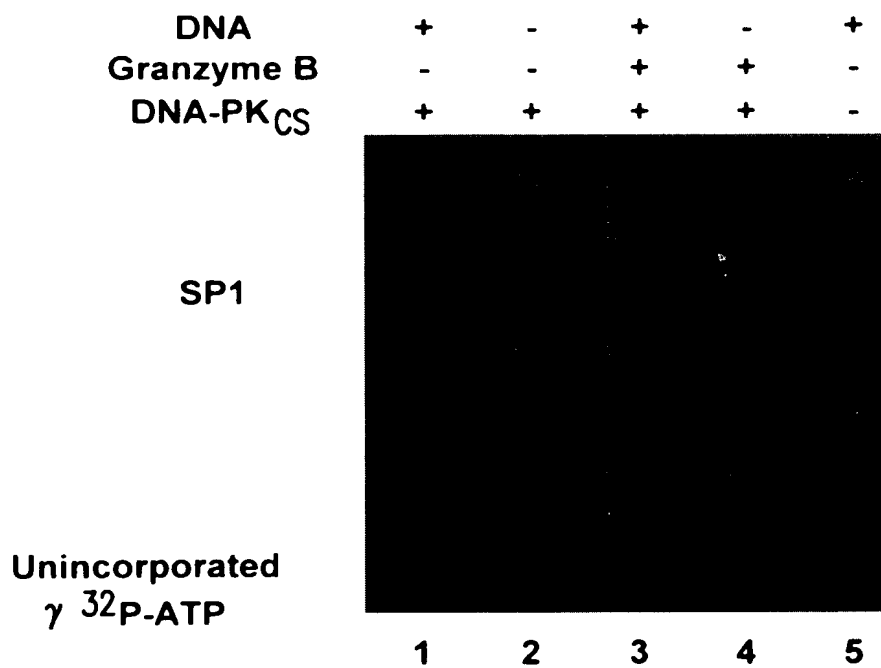


FIG.3

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4/17

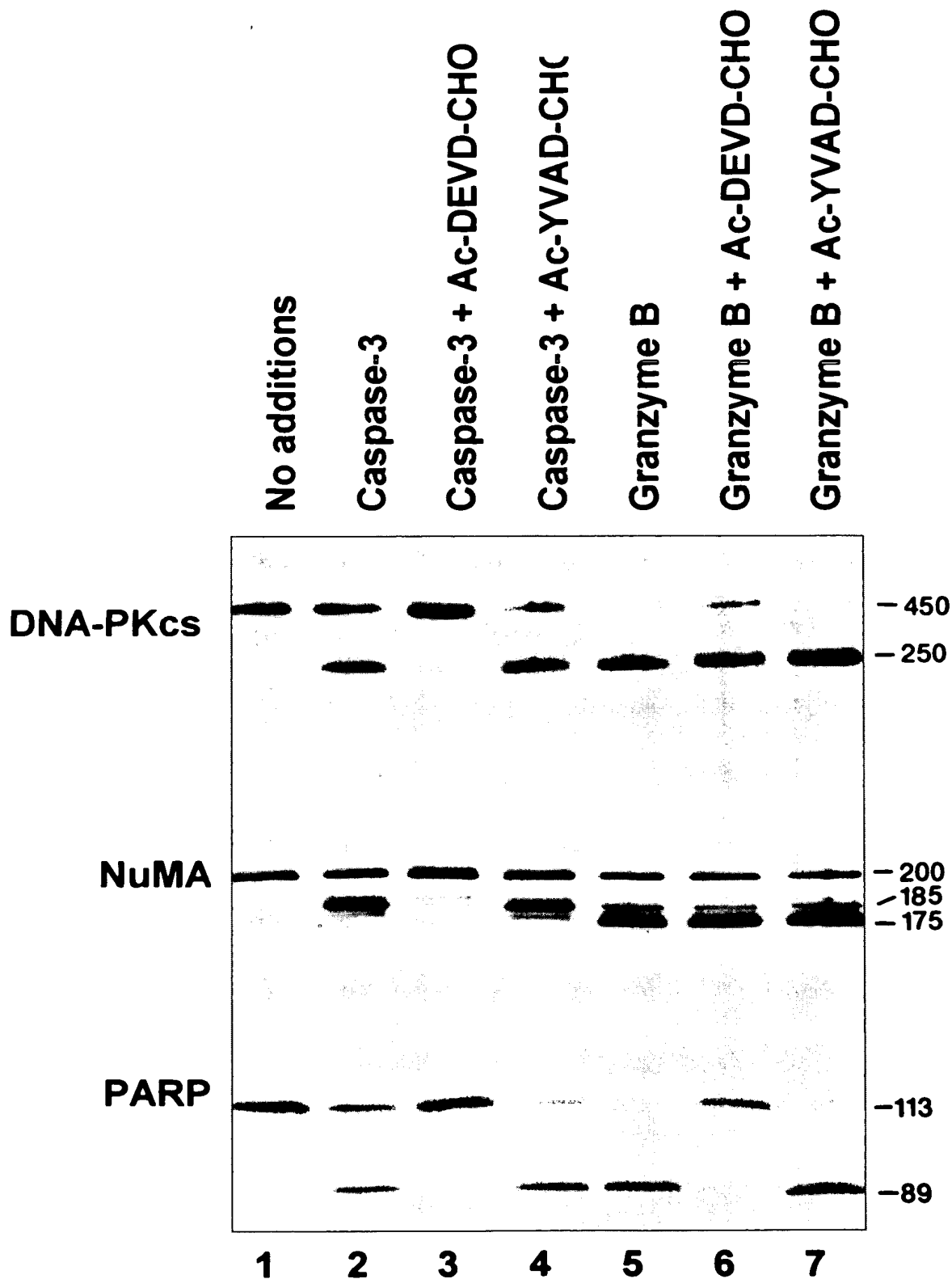


FIG.4

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5/17

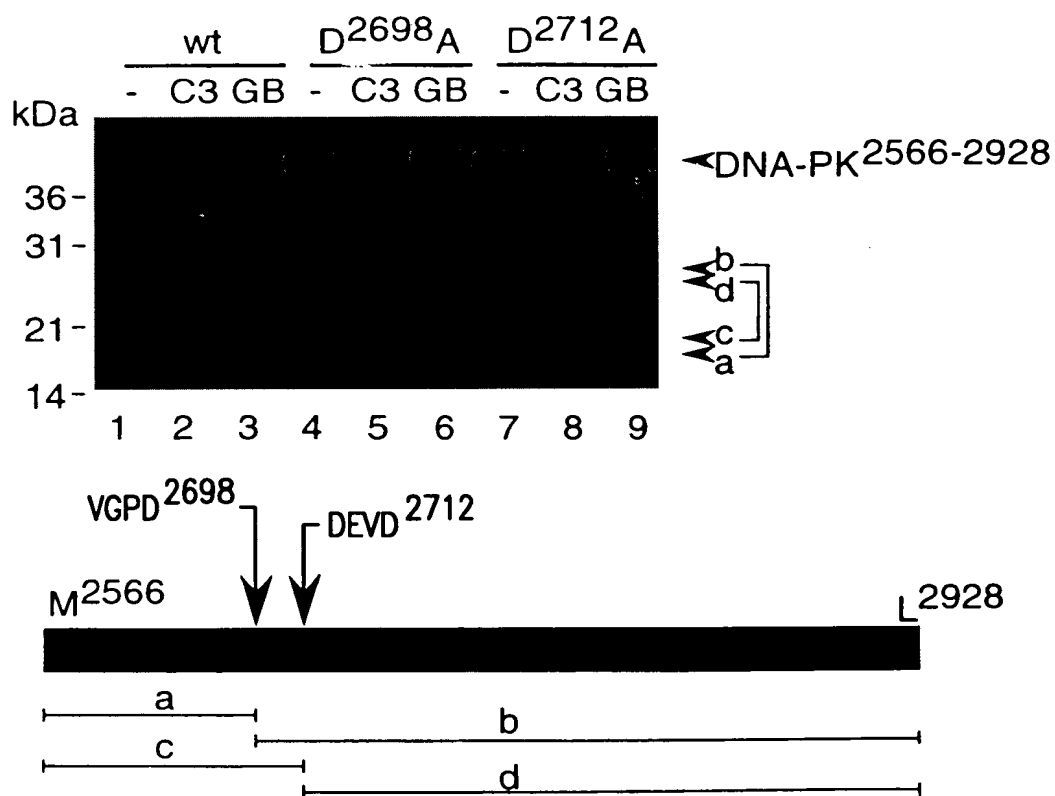


FIG.5

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6/17



Ca <sup>2+</sup>	+	-	+	+
EDTA	-	+	-	-
Ac-DEVD-CHO	-	-	-	+
Granule Contents	-	+	+	+

DNA-PKcs

NuMA

PARP

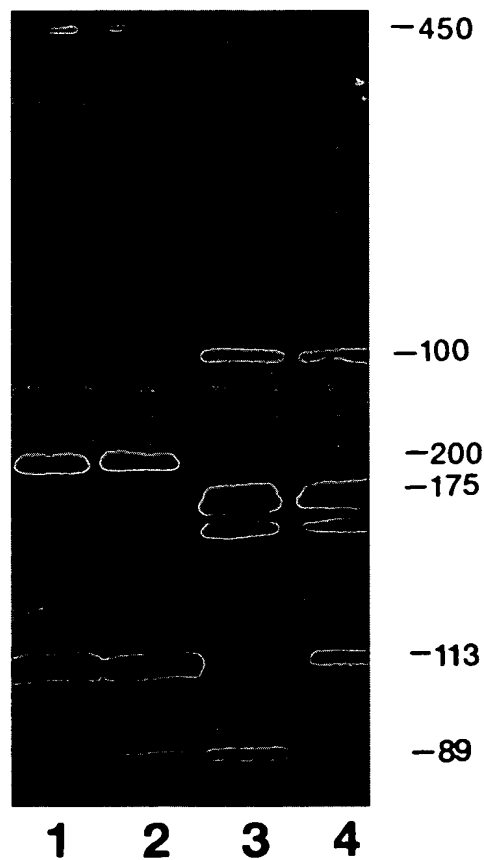


FIG.6

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LAK	+	-	+	+
K562	-	+	+	+
DEVD	-	-	-	+

DNA-PK<sub>CS</sub>

PARP

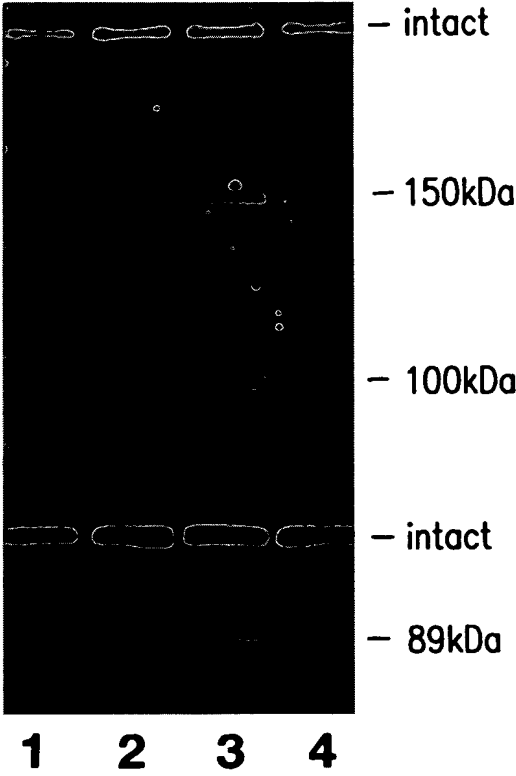


FIG.7

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09/296,662

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8/17

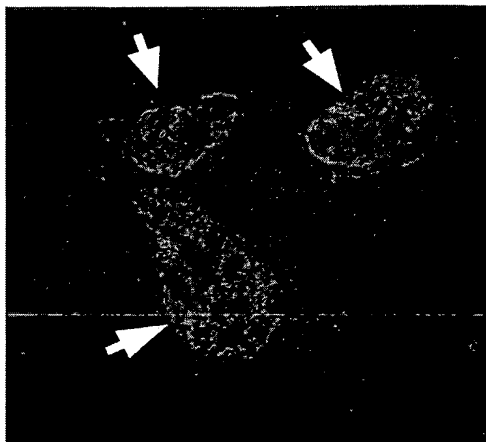


FIG.8C



FIG.8B



FIG.8A

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REPLACEMENT SHEET

9/17

LOCUS 284337 2101 aa 12-APR-1996  
DEFINITION NuMA protein - human.  
ACCESSION 284337  
PID g284337  
DBSOURCE PIR:locus A42184  
summary: #length 2101 #molecular-weight 236296 #checksum 8715.  
PIR dates: 31-Dec-1993 #sequence\_revision 31-Dec-1993#text\_change  
12-Apr-1996.  
KEYWORDS .  
SOURCE human.  
ORGANISM Homo sapiens  
Eukaryotae; mitochondrial eukaryotes; Metazoa; Chordata;  
Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae;  
Homo.  
REFERENCE 1 (residues 1 to 2101)  
AUTHORS Compton,D.A., Szilak,I. and Cleveland,D.W.  
TITLE Primary structure of NuMA, an intranuclear protein that defines a  
novel pathway for segregation of proteins at mitosis  
JOURNAL J. Cell Biol. 116 (6), 1395-1408 (1992)  
MEDLINE 92176238  
REFERENCE 2 (residues 1 to 2101)  
AUTHORS Tang,T.K., Tang,C.J., Chen,Y.L. and Wu,C.W.  
TITLE Nuclear proteins of the bovine esophageal epithelium.II. The NuMA  
gene gives rise to multiple mRNAs and gene products reactive with  
monoclonal antibody W1  
JOURNAL J. Cell. Sci. 104 (Pt 2), 249-260 (1993)  
MEDLINE 93280231  
REFERENCE 3 (residues 1 to 2101)  
AUTHORS Harborth,J., Weber,K. and Osborn,M.  
TITLE Epitope mapping and direct visualization of the parallel,  
in-register arrangement of the double-stranded coiled-coil in the  
NuMA protein  
JOURNAL EMBO J. 14 (11), 2447-2460 (1995)  
MEDLINE 95300777  
FEATURES Location/Qualifiers  
source 1..2101  
/organism="Homo sapiens"  
/db\_xref="taxon:9606"  
Protein 1..2101  
/product="NuMA protein"

FIG.9A



10/17

1 mtlhatrgaa llswvnslhv adpveavlql qdcsifikii drihgteegq qilkqpvser  
61 ldfvcsflqk nrkhpsspec lvsqkvleg selelakmtm llyhstms kspdwefq  
121 ykiquelavi lkfvldhedg lnlnedlenf lqkpvstc sstfpeels pshqakreir  
181 flqlkvass ssgnnflsgs paspmgdilq tpqfmrrlk kqladersnr delelelaen  
241 rklktekdaq iammqgridr lallnekqaa splepkelee lrdknesltm rihetlkqcq  
301 dlkteksqmd rkinqlseen gdlsfklref ashllqlqda lnelttehs atqewlekqa  
361 qlekeltaal qdkkcleeen eilqgklsq eehlsqldn ppqekgevlg dvlqletlkq  
421 eaatlant qlgarvemle terqqeakl laerghfee kqqlsslitd lqssisnlsq  
481 akeeeqasq ahgarltaqv asltsettl natiqqdqe laglkqqake kqaqlaqlq  
541 qeeqasqglr hqveqlsssl kqkeqqlkev aekqeatrd haqqlatsae ereaslrerd  
601 aalkqleale kekaakleil qqqlqvanea rdsqatsvtq aqrekaelsr kveelqacve  
661 tarqegheaq aqvaelelql rseqqkatek ervaekdql qeqlqalkes lkvtkgslee  
721 ekrraadale eqqrciselk aetrlvegh krerkelee ragrklear llqlgeahqa  
781 etevlrrela eamaaqhtae seceqlvkev aawrdgyeds qqeeaqygam fqeqlmtlke  
841 ecekargelq eakekvagie shselqisrq qnklaelhan laralqqvqe kevraqklad  
901 dlstlqekma atskevarle tlvrkageqq etasrelvke paragdrpe wleeqqgrqf  
961 cstqaalqam ereaegmgne lerlraalme sqqqqqeerg qqerevarlt qergraqadl  
1021 alekaarael emrlqalne qrvefatlqe alahalteke gkdqelaklr glesaqikel  
1081 eelrqtvkql keglakkeke hasgsaqse aagrtptgp klealraevs kleqqcqkq  
1141 eqadslersl eaerasraer dsaletlqq leekaqelgh sqsalasaqr elaafrtkvq  
1201 dhskaedewk aqvargrqa erknsllss eevsilnrq vlekegeske lkrlvmaese  
1261 ksqkleesca ccrqrpatv pelqnaallc grrcrasgre aekgrvasen lrgeltsqae  
1321 raeelqgelk awqekffqke qalstlqleh tstqalvsel lpakhlcqql qaeqaaekr  
1381 hreeleqskq aagglraeli raqrelgeli plrqkvaee rtaqqlraek asyaeqlsml  
1441 kkahgliae nrglgeranl grqfleveld qarekyvqel aavradaetr laevqreaqs  
1501 tarelevmta kyegakvkvl eerqrfqeer qltaqveel skkladsdqa skvqqqklka  
1561 vqaggesqq eagrfaqln elqaqlsqke qaashyklqm ekakthydak kqaqnelqeq  
1621 lrsleqlqke nkelraeae lghelqaagl ktkeaeqtr hltaqvrsle aqvahadqql  
1681 rdlgkfquat dalksrepqa kpqldlsids ldlisceegtp lsitsklprt qpdgtsvpge  
1741 paspisrlp pkveslesly ftpiparsqa plessldslg dvfldsgrkt rsarrttqi  
1801 initmtkkld veepdsanss fystrsapas qaslratsst qslarlgspd ygnsalislp  
1861 gyrpttrssa rrsqagvssg appgrnsfym gtcqdepegl ddwnriaelq qnrvcpphl  
1921 ktcyplesrp slslgtitde emktgdpqet lrrasmapiq iaegtgittr qqrkrvslep  
1981 hqpgtpeesk katscfprpm tprdrhegrk qstteaqqka apastkqadr qsmefslin  
2041 tpkklgnsll rrgaskkals kaspntrsgt rrspriattd asaataaig atprakgak  
2101 h

FIG.9B



09/296,662

# REPLACEMENT SHEET

11/17

LOCUS 107227 2115 aa10-NOV-1995

DEFINITION NuMA protein - human.

ACCESSION 107227

PID g107227

DBSOURCE PIR: locus S23647

summary: #length 2115 #molecular-weight 238273 #checksum 4391.

PIR dates: 19-Feb-1994 #sequence\_revision 10-Nov-1995 #text\_change 10-Nov-1995.

KEYWORDS

SOURCEhuman.

ORGANISM Homo sapiens

Eukaryotae; mitochondrial eukaryotes; Metazoa; Chordata;

Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae;

Homo.

REFERENCE 1 (residues 1 to 2115)

AUTHORS Yang,C.H., Lambie,E.J. and Snyder,M.

TITLE NuMA: an unusually long coiled-coil related protein in the mammalian nucleus

JOURNAL J. Cell Biol. 116 (6), 1303-1317 (1992)

MEDLINE 92176231

FEATURES Location/Qualifiers

source 1..2115

/organism="Homo sapiens"

/db\_xref="taxon:9606"

Protein 1..2115

/product="NuMA protein"

## FIG.10A



1 mtlhatrgaa llswvnslhv adpveavlql qdcsifikii drihgteegq qilkaqvser  
61 ldfvcsflqk nrkhpsspec lvsqkvleg selelakmtm lll yhstms kspdrweqfe  
121 ykiquaelavi lkfvldhedg lnlnedlenf lqkapvpstc sstfpeels pshqakreir  
181 fllelqvass sagnnflsgs paspmgdilq tpqfqmrrlk kqladersnr delelelaen  
241 rklltekdaq iammqgridr lallnekqaa splepkelee lrdknesltm rllhetlkqcq  
301 dlkteksqmd rkinqlseen gdlsfklref ashlaqlqda lneltteehsk aCqewlekqa  
361 qlekelsaal qdkkcleeqn eilqgklsq eehlsqldn ppqekgevlq dvlqletlkq  
421 eaatl aannt qlqarvemle terqqeakl laerghfeee kqqlssltd lqssisnlsq  
481 akeeleqasq ahgarltaqv asltsettl natiqqdqde laglkqqake kqaqlaqltq  
541 qqeqasqqlr hqveqlsssl kqkeqqlkev aekqeatrqd haqqlataae ereaslrer  
601 aalkqleale kskaakleil qqqlqvanea rdsaqtsvtq aqrekaelsr kveelqacve  
661 tarqeqheaq aqvaelelql rseqqkatek ervaekdql qeqlqalkes lkvtkgslee  
721 ekrraadale eqqrciselk aetrslveqh krerkeleee ragrkglear lqqlgeahqa  
781 etevlrrela eamsaqhtae seceqlvkev aawreryeds qqeeaqygam fqeqlmtlke  
841 ecekarqelq eakekvagie shselgisrq qnelaelhan laralqqvqe kevraqklad  
901 dlstlqekma atskevarle tlvrkageqq etasrelvke paragdrqpe wleeqqgrqf  
961 cstgaalgam ereaeqmgne lerlraalme sqgqqeerg qqerevarlt qergraqadl  
1021 alekaarael emrlqalne qrvefatlqe alahalteke gkdqelaklr gleaaqikel  
1081 eelrqtvkql keqlakkoke hasgsqaqse aagrtptgp klealraevs kleqqcqkqq  
1141 eqadslersl eaerasraer dsaletlqq leekaqelgh sqsalasaqr elaafrtkvq  
1201 dhskaedewk aqvargrqa erknslissl eevesilnrq vlekegeske lkr lvmase  
1261 ksqkleerlr llqaetasns araerssal reevqslree aekqrvasen lrqeltsqae  
1321 raeelqgelk awqekffqke qalstlqleh tstqalvsel lpakhlcqql qaeqaaaekr  
1381 hreelegskq aagglrael lraqrelgeli plrqkvaee rtaqqlraek asyaeqlsml  
1441 kkahgliae nrglgeranl grqfleveled qarekyvqel aavradaetr laevqreaqs  
1501 tarelevmta kyegakvkv l eerqrfqeer qlktaqveql evfqreqltkq veelskklad  
1561 sdqaskvqqq klkavqaqgg esqqaqrlq aqlnelqaql sqkeqasehy klqmekakth  
1621 ydakkqqnqe lqeqlrsloq lqkenkelra eaerlghelq qaglkkeae qtrhltaqv  
1681 rsleaqvaha dqqlrdlgkf qvatdalksr epqakpql d sidsldisce egtplsitsk  
1741 lprtpdgt s vpgepaspi qrlppkvesl eslyftpipa rsqaplessl dslgdvfdqs  
1801 grktrsarr ttqiinitmt kkl dveepds anssfysters apasqaslr tsstqslarl  
1861 gspdygnsal lslpgyrptt rssarrsqag vssgappgrn sfymgtcqe peqlddwnri  
1921 aelqqnrvc pphlktcyp l esrpslsgt itdeemktgd ppetlrrasm qpiaqegtq  
1981 ittrqqrkrv slephqpgt peskkatscf prpmtprdrh egrkqsttea qkkaapastk  
2041 qadrrgsmaf silntpkklg nslrrgask kalskaspnt rsgtrrsprl atttasaata  
2101 aaigatprak gkakh

FIG.10B

13/17

LOCUS 1362789 4096 aa 06-SEP-1996  
DEFINITION DNA-activated protein kinase, catalytic subunit - human.  
ACCESSION 1362789  
PID g1362789  
DBSOURCE PIR:locus A57099  
summary: #length 4096 #molecular-weight 465420 #checksum 1795.  
genetic: #gene GDB:PRKDC ##cross-references GDB:234702  
#map\_position 8q11.  
PIR dates: 27-Oct-1995 #sequence\_revision 27-Oct-1995 text\_change  
06-Sep-1996.  
KEYWORDS DNA binding; DNA recombination; DNA repair; nucleus;  
phosphotransferase.  
SOURCE human.  
ORGANISM Homo sapiens  
Eukaryotae; mitochondrial eukaryotes; Metazoa; Chordata;  
Vertebrata; Mammalia; Eutheria; Prunates; Catarrhini; Hominidae;  
Homo.  
REFERENCE 1 (residues 1 to 4096)  
AUTHORS Sipley, J.D., Menninger, J.C., Hartley, K.O., Ward, D.C., Jackson, S.P.  
and Anderson, C.W.  
TITLE Gene for the catalytic subunit of the human DNA-activated protein  
kinase maps to the site of the XRCC7 gene on chromosome 8  
JOURNAL Proc. Natl. Acad. Sci. U.S.A. 92 (16), 7515-7519 (1995)  
MEDLINE 95365397  
REFERENCE 2 (residues 1 to 4096)  
AUTHORS Hartley, K.O., Gell, D., Smith, G.C., Zhang, H., Divecha, N.,  
Connelly, M.A., Admon, A., Lees-Miller, S.P., Anderson, C.W. and  
Jackson, S.P.  
TITLE DNA-dependent protein kinase catalytic subunit: a relative of  
phosphatidylinositol 3-kinase and the ataxia telangiectasia gene  
product  
JOURNAL Cell 82 (5), 849-856 (1995)  
MEDLINE 95401275  
FEATURES Location/Qualifiers  
source 1..4096  
/organism="Homo sapiens"  
/db\_xref="taxon:9606"  
Protein 1..4096  
/note="DNA-PK-cs"  
/product="DNA-activated protein kinase, catalytic subunit"

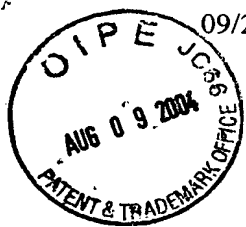
FIG.11A



14/17

1 magsgagvrc slrlqetls aadrcgaala ghqlirglq ecvlssspav lalqtslvfs  
61 rdfgllvfvv kslnsiefre creeilkflc ifleRmqki apysveiknt ctsvytkdra  
121 akckipaldl likllqfrs srlmdefkig elfskfygel alkkkipdtv lekvyellgl  
181 lgevhpsemi nnaenlfraf lgelktqmts avrepklpvl agclkgssl lcnftksmee  
241 dpgtsreife fvlkairpqi dlkryavpsa glrlfalhas qfstclldny vsifevlikw  
301 cahtnvelkk aalsalesfl kqvsnmvakn aemhknklqy emeqfygiir nvdsnnkels  
361 iairgyglfa gpokvinakd vdfmyveliq rckqmfltqt dtgdyrvyqm psflqsvasv  
421 llyldtvpev ytpvlehlv mqidsfpqys pkmqlvccra ivkvflalaa kgpvlrncis  
481 tvvhaglliri cakpvvlpg pesesedhra sgevtgkwk vptykdyvd frhlssdqam  
541 mdsiladeaf fsvnsssesl nhillydefvk svlkivekl ditleiqtvgeq engdeapgv  
601 wmiptedpaa nlhpakpkdf safinlvefc reilpekqae ffepwvysfs yelilqstrl  
661 plisgykll sitvrnakki kyfegvspks lkhspedpek yscfalvkvf gkevavkmkq  
721 ykdellasci tflslphni ieldvrayvp alqmafklgl sytplaevgl naleewsiyi  
781 drhvmqpyyk dilpcldgyl ktsalsdetk nnwevsalsr aaqkgfnkvv lkhllkktkl  
841 ssneaislee irirvqmlg slggqinknl lvtssdemm ksyvawdrek rlsfavpfre  
901 mkpvifldvf lprvtelalt asdrqtkvaa cellhsmvmf mlgkatqmpg ggggappmyq  
961 lykrtfpvll rladvdqvt rqlyeplvmq lihwftnnhk fesqdtvsll eaildgivdp  
1021 vdstlrdfcg rcireflkws ikqitpqaqe kspvntkslf krlyslalhp nafkrlgasl  
1081 afnniyrefr eeelsveqfv fealviymes lalahadeks lgtiaqccda idhlcriiek  
1141 khvslnkakk rrlprgfpps asclldlvk wllahcgrpq tecrhksiel fykfvplpg  
1201 nrspnlwldk vlkeegvsfl intfegggcg qpsgilagpt llylrgpfs qatlclwldl  
1261 laalecyntf igertvgalq vlgteaqqsl lkavaffles iamhdiiae kcfgtgaagn  
1321 rtspqegery nyskctvvvr imefttlln tspegwkllk kdlcnthlmr vlvqtlcepa  
1381 sigfnigdvq vmahlpdvcv nlmkalkmsp ykdilethlr ekitaqsiee lcavnlygpd  
1441 aqvdrsrllaa vvsackqlhr agllhnlps qstdlhsvg tellslvykg iapgderqcl  
1501 psldlsckql asgllelafa fgglycerlv llnpavlst aslgssqgsv ihfshgeyfy  
1561 slfsetinte llknldlav elmqssvnt kmvsavlngm ldqsfreran qkhqglklat  
1621 tilqhwkkcd swwakdsple tkmavalla kilgidssvs fntshgsfpe vfttyislla  
1681 dtkldhlkg qavtlpfft sltggseel rrvleqliva hfpmqsrefp pgtprfnnyv  
1741 dcmkkfldal elsqspmlle lntevlcreq qhvmeelfqs sfrriarrgs cvtqvglls  
1801 vyemfrkddp rlsftrqsfv drsltlwh csldalreff stivvdaidv lksrftkline  
1861 stfdtqitkk mgyykildvm ysrlpkddvh akeskinqv hgscitegne ltktlklcy  
1921 daftenmage nqlerrry hcaayncas vlcvfnekl fyqglfsek peknllifen  
1981 lidlkrrynf pvevepmer kkyieirke areaangsd gpsymssly ladstlseem  
2041 sqdfstgvq sysyssqdp patgrfrrr qrdptvhddv lelemdelnr hecmapltal  
2101 vkhmbrslgp pqgeedsvpr dlpswmkflh gklgnpivpl nirlflaklv inteevfrpy  
2161 akhwlspllg laasenngge gihymveiv atilswtga tptgvpkdev lanrllnflm  
2221 khvfhpkrav frhnleiikt lvecwkdcsl ipyrlifekf sgkdpnskdn svgiqllgiv  
2281 mandlppydp qcqiasseyf qalvnnefv rykevyaaaa evlgiliryv merknilees  
2341 lcelvakqlk qhantmedkf ivclnkvtks fppladrfrn avffllpkfh gvlktlclev  
2401 vlcrvegnte lyfqlkskdf vqvmrhrder qkvcldiyyk mmpklkpvel relinpvvef  
2461 vshpsttcre qmynilmwih dnyrdpeset dndsqeifkl akdvliaggl denpgqlii  
2521 rnfwshterl pentldrlla lnslyspkie vhfslatnf llemtsmspd ypnpmfehpl  
2581 secefqeyti dsdwrfrstv ltpmfvetqa sqgtlqtrtq egslsarwpv agqiratqqq  
2641 hdflltqtad grssfdwltg sstdplvdht spssdslifa hkrserlqra plksvgpdfg  
2701 kkrllglpgde vdnkvkgaag rtdllrlrrr fmrdeklsl myarkgvaeg krekeiksel

FIG. 11B



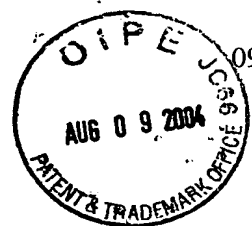
09/296,662

## REPLACEMENT SHEET

15/17

2761 kmkqdagvvl yrsyrhgdip diqikhssli tpiqavaqrd piakqlfss lfsgilkemd  
2821 kfkltseknn itqklldfn rflnttfsff ppfvsciqdi scqhaallsl dpaavsagcl  
2881 aslqapvgir lleallrll paelpakrvr gkarlppdvl rwvelaklyr sigeydvirg  
2941 iftseigtka itqsallaea rsdysesakq ydealnkqdw vdgepteak dfwelaslde  
3001 ynhlaewksl eycstasids enppdlnkiw sepfyqetyl pymirskkl llqgeadqsl  
3061 ltfidkamhg elqkailelh ysqelsllyl lqddvdraky yigngiqsfm qnyssidvll  
3121 hqsrltklqs vqalteiqef isfiskqgnl seqvplkrll ntwnrypda kmdpmniwdd  
3181 iitnrcffls kieekltplp ednsmnvdqd gdpsdrmevq eqeedissli rsckfsmkmk  
3241 midsarkqnn fslamklke lhkesktrdd wlvswvqsy rlschrsrsq gcseqvltvl  
3301 ktvsildenn vssylxknll afrdqnilg ttyriianal ssepaclaei eedkarrile  
3361 lsgsssedse kviaglyqra fahlseavqa aseagppsw scgpaagvid aymtladfc  
3421 qqlrkeeena svtdsaelqa ypalw ekml kalklnsnea rikfprllgi ierypeetls  
3481 lmtkeissvp cwqfiswish mvalldkda vavqhsveei tdnyppaivy pfiissesys  
3541 fkdttstghkn kefvariksk ldqggviqdf inalldqslnp ellfkdwnd vraelaktpv  
3601 nkkniekmye rmyaalgdpk apglgafrrk fiqtfgkefd khfgkggskl lrmkl sdfnd  
3661 itnmlilkmn kdsppgnlk ecspwmsdfk veflrnelei pggydgrgkp lpeyhvriag  
3721 fdervtvmass lrrpkriir ghderhpfl vkgedlrqd qrveqlfqvm ngilaqdsac  
3781 sqralqlrty svvpmtssdp rappceykdw ltkmsgkhdv gaymlmykga nrtetvtser  
3841 kreskvpadi lkrafvrmst speafllars hfasshalic ishwiigigd rhlnnfmvam  
3901 etggvigidf ghafgsatqf lpvpelmpfr ltrqfinlml pmketglmys imvhalrafr  
3961 sdpgllntm dvfvkepsfd wknfeqkmlk kggswiqein vaeknwprq kicyakrkla  
4021 ganpavitcd elllghekap afrdyavar gskdhniaraq epesqlseet qvkcimdgat  
4081 dpnilgrtwe gwepwm

FIG.11C



09/296,662

REPLACEMENT SHEET

16/17

LOCUS 130781 1014aa 01-NOV-1997  
DEFINITION POLY (ADP-RIBOSE) POLYMERASE (PARP) (ADPRT)  
(NAD(+)

ADP-RIBOSYLTRANSFERASE) (POLY(ADP-RIBOSE)  
SYNTEHTASE).

ACCESSION 130781

PID gl30781

DBSOURCE SWISS-PROT: locus PPOL\_HUMAN, accession P09874

class: standard.

created: Mar 1, 1989.

sequence updated: Dec 1, 1992.

annotation updated: Nov 1, 1997.

xrefs: gi: 510112, gi: 1017423, gi: 190166, gi: 190167, gi: 337423,  
gi: 337424, gi: 178151, gi: 178152, gi: 190266, gi: 190267, gi:  
178188, gi: 178190, gi: 189533, gi: 189534, gi: 35286, gi: 825702,  
gi: 35288, gi: 189535, gi: 189536, gi: 88229, gi: 88227, gi:  
627553, gi: 107162, gi: 107160, gi: 482956, gi: 420073, gi: 107158

xrefs (non-sequence databases): AAR;EIUS/GHENT-2DPAGE 1620,

MIM

173870, MIM 173871, PROSITE PS00347, PROSITE PS50064

KEYWORDS TRANSFERASE; GLYCOSYLTRANSFERASE; NAD; DNA-  
BINDING; NUCLEAR

PROTEIN; ADP-RIBOSYLATION; ZINC-FINGER; ZINC.

SOURCE human.

ORGANISM Homo sapiens

Eukaryotae; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria;  
Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 1014)

AUTHORS Auer,B., Nagl,U., Herzog,H., Schneider,R. and  
Schweiger,M.

TITLE Human nuclear NAD+ ADP-ribosyltransferase(polymerizing):  
organization of the gene

JOURNAL DNA 8 (8), 575-580 (1989)

MEDLINE 90091744

REMARK SEQUENCE FROM N.A.

REFERENCE 2 (residues 1 to 1014)

AUTHORS Uchida,K, Morita,T., Sato,T., Ogura,T., Yamashita,R.,  
Noguchi,S.,

Suzuki,H., Nyunoya,H., Miwa,M. and Sugimura,T.

TITLE Nucleotide sequence of a full-length cDNA for human fibroblast  
poly(ADP-nbose) polymerase

JOURNAL Biochem. Biophys. Res. Commun. 148 (2), 617~22 (1987)

MEDLINE 88076933

REMARK SEQUENCE FROM N.A.

TISSUE=FIBROBLAST

FIG.12A



# REPLACEMENT SHEET

17/17

1 maessdklyr veyaksgras ckkcsesipk dslrmaimvq spmfdgkvph wyhfscfwkv  
61 ghsirhpdve vdghselrwd dqakvkktae aggvtkgqgd gigskaektl gdfaaeyaks  
121 nrstckgcme kiekqqvrls kkmvdpekpa lgmidrwyhp gcfvknreel gfrpeysasq  
181 lkgfslate dkealkkqlp gvksegkrkg devdgvdeva kkkkskekdk dsklekalka  
241 qndliwnikd elkkvcstnd lkellifnkq qvpegesail drvadgmvfg allpceecag  
301 qlvfkedayy ctgdvtawtk cmvktqtpnr kewvtpkefr eisylkkllkv kkqdrifppe  
361 tsasvaatpp pstasapaav nssasadkpl snmkiltlgk lsrnkdevka mieklggklt  
421 gtankaslc i stkkevekmn kkmeevkean irvvsedflq dvsastkslq elflahilsp  
481 wgaevkaepv evvaprgksg aalskkskgq vkeeginkse krmkltlkkg aavdpdagle  
541 hsahvlekkg kvfeatlplv divkgtnsyy klqlleddke nrywifrawg rvgtvigsnk  
601 legmpskeda iehfmklyee ktgnawhakn ftkypkkfyp leidyggdee avkkltnpg  
661 tksklpkpvq dlikmifdve smkkamveye idlqkmpkg lskrqiaay silsevqqav  
721 sqgssdsqil dlsnrfytli phdfgmkkpp llnnadsvqa kvemldnld ievaysllrg  
781 gsddsskdpi dvnyeklkt ikvvdrdsee aeikirkyvkn thatthnayd levidifkie  
841 regecqrykp fkqlhnrrll whgerttnfa gilaaglrta ppeapvtgym fgkgyfadm  
901 vksanycht sqgdpiglil lgevalgnmy elkhashisk lpkgkhsvkq lgkttpdpsa  
961 nislqdvdp lgtgissqvn dtsllyneyi vydiaqvnk yllklkfnfk tslw

FIG.12B

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